STATEMENT OF WORK
Grassed Waterway (412)
Oklahoma

These deliverables apply to this individual practice. For other planned practice deliverables refer to those specific Statements of Work.

DESIGN

Deliverables:

1. Design documents that demonstrate criteria in practice standard have been met and are compatible with planned and applied practices
   a. Practice purpose(s) as identified in the conservation plan
   b. List of required permits to be obtained by the client
   c. Compliance with NRCS national and state utility safety policy (National Engineering Manual (NEM) Part 503-Safety, Subpart A - Engineering Activities Affecting Utilities 503.00 through 503.06 and NEM Oklahoma Supplement Part 503-Safety, Subpart A - Engineering Activities Affecting Utilities, OK503.02)
      - Oklahoma engineering worksheet *OK-ENG-45 Utilities Inventory Form* will be used to document utilities.)
   d. Practice standard criteria related computations and analyses to develop plans and specifications including but not limited to:
      I. Survey notes which show that a thorough and detailed site survey was completed
         a) Run profile at stations not exceeding 200' and obtain sufficient cross sections to adequately design waterway
         b) Set centerline cut stakes as needed to establish depth of waterways below terrace grades or field elevations
         c) Survey data shall be maintained in the file attached to or documented on one of the following Oklahoma engineering worksheets or equivalent:
            - *OK-ENG-2 Waterway Data Sheet, Bermless (Trapezoidal)*
            - *OK-ENG-3a Waterway Data Sheet, Two Berms (Trapezoidal)*
            - *OK-ENG-3b Waterway Data Sheet, One Berm (Trapezoidal)*
            - *OK-ENG-3c Waterway Data Sheet, Bermless (Parabolic)*
            - *OK-ENG-3d Waterway Data Sheet, One Berms (Parabolic)*
            - *OK-ENG-3e Waterway Data Sheet, Two Berms (Parabolic)*
      II. Hydrology/hydraulics documentation and calculations using approved charts and/or computer tools
         a) Peak design flows for each reach design of the grassed waterway
         b) Safe velocities for each reach based on soils and/or vegetal retardance
      III. Design capacity and stability computations tools
         a) Designing waterway by segments - design remains uniform within each reach or segment (uniform bottom width and depth throughout segment)
         b) Designing waterway with variable uniformity between segments- bottom width and depth varies between segments to provide smooth transition to the next design segment
      IV. Outlet condition, capacity and stability documentation
      V. Seedbed preparation, soil amendments and vegetation requirements (See Critical Area Planting (342) Statement of Work)
2. Written plans and specifications including sketches and drawings shall be provided to the client that adequately describes the requirements to install the practice and obtain necessary permits. Plans and specification shall be developed in accordance with the requirements of conservation practice standard Grassed Waterway (Code 412)

- Oklahoma standard drawings *OK-DWG-501 Vegetated Waterway – Trapezoidal or OK-DWG- 502 Vegetated Waterway – Parabolic* or equivalent will be provided to the client for grassed waterways designed in Oklahoma

3. Design Report and Inspection Plan as appropriate (NEM Part 511, Subpart B Documentation, 511.11 and Part 512, Subpart D Quality Assurance Activities, 512.30 through 512.32)
4. Certification that the design meets practice standard criteria and comply with applicable laws and regulations will be signed by an employee with appropriate approval authority for design assigned on Form OK-ENG-1 or OK-ENG-1 (NEM Subpart A, 505.3)

   - Oklahoma engineering worksheet *OK-ENG-2 Waterway Data Sheet, Bermless (Trapezoidal), OK-ENG-3a Waterway Data Sheet, Two Berms (Trapezoidal), OK-ENG-3b Waterway Data Sheet, One Berm (Trapezoidal), OK-ENG-3c Waterway Data Sheet, Bermless (Parabolic), OK-ENG-3d Waterway Data Sheet, One Berms (Parabolic), OK-ENG-3e Waterway Data Sheet, Two Berms (Parabolic)* or equivalent will be used to document grassed waterways designed in Oklahoma

5. Operation and maintenance plan
6. Design modifications during installation as required

INSTALLATION

Deliverables

1. Documentation of pre-Installation conference with client and contractor
2. Verification that client has obtained required permits
3. Staking and layout according to plans and specifications including applicable layout notes
4. Installation inspection (according to inspection plan as appropriate)
   a. Actual materials used
   b. Maintaining a job diary with dates and record of inspections made, testing completed, instructions provided to the contractor, etc., to document compliance with standards and specifications. Documenting in the assistance notes in the plan is acceptable up to and including engineering job class V
5. Facilitate and implement required design modifications with client and original designer
6. Advise client/NRCS on compliance issues with all federal, state, tribal, and local laws, regulations and NRCS policies during installation
7. Certification that the installation process and materials meets design and permit requirements

CHECK OUT

Deliverables

1. Supporting documentation
   a. Completed job diary or assistance notes documenting inspections made, testing completed, materials used, etc.
   b. Survey notes for layout, inspections, and final checkout documenting compliance with standards and specifications
      i. Layout survey
         a) Establish the alignment(s) referenced to hard points or a temporary bench mark
         b) Set temporary markers such as flags or stakes along the alignment of the waterway channel
            - A sufficient number of temporary markers should be used to provide adequate construction

alignment

- Identify the required cut or fill on each marker as appropriate

ii. Construction checks and inspections as needed to insure installation is in compliance with standards and specifications

iii. Final checkout survey

a) Profile the entire channel and ridge recording the profile of the channel and ridge for the entire length. Compare the as-built profile to the design profile to ensure that the as-built constructed slope is within specifications

b) One cross section in each design segments with differing slope, bottom width or depth is required. Cross section the weakest section(s) of the design segment

c) The constructed length will be measured by chain, wheel, or other methods of accurate measurement to the nearest one foot, unless length is measured by these means during layout and no changes were made during construction

d) The certified construction width may include the overall width to the outside edge of the border ridges. The spoil width may be computed by assuming a ridge of 5:1 side slopes, 1 foot high and top width enough to balance the area of cut. The vegetation width will be only that width which will be vegetated. Areas will be computed to the nearest one-tenth of an acre

e) If minor cuts or fills are needed to complete the waterway, show on the cross section the section needing additional work. Initial and date when the work has been done

f) Show any pertinent remarks on vegetation needs, outlets, etc. Refer to Critical Area Planting (342) for vegetation requirements and installation guidance

g) Document on the appropriate Oklahoma engineering worksheet and standard drawing or equivalent

c. As-built drawings with changes from the original drawing clearly shown

d. Extent of practice units applied and location identified on a map

e. Vegetation certification or schedule documented on OK-ECS-04 – Vegetative Data Worksheet

f. Final quantities

2. Certification that the installation meets NRCS standards and specifications and is in compliance with permits will be signed by an employee with appropriate approval authority for construction assigned on Form OK-ENG-1, OK-ENG-1 a, or by special letter. (NEM Subpart A, 505.39(c)(1))

- Document on one of the following *Oklahoma engineering worksheets or drawings or equivalent*:
  - *OK-ENG-2 Waterway Data Sheet, Bermless (Trapezoidal)*
  - *OK-ENG-3a Waterway Data Sheet, Two Berms (Trapezoidal)*
  - *OK-ENG-3b Waterway Data Sheet, One Berm (Trapezoidal)*
  - *OK-ENG-3c Waterway Data Sheet, Bermless (Parabolic)*
  - *OK-ENG-3d Waterway Data Sheet, One Berms (Parabolic)*
  - *OK-ENG-3e Waterway Data Sheet, Two Berms (Parabolic)*

3. Progress reporting

REFERENCES

- Field Office Technical Guide (eFOTG), Section IV, Conservation Practice Standard –Grassed Waterway, 412
- National Engineering Manual
- NRCS National Engineering Handbook, Part 650 – Engineering Field Handbook, Chapter 7 – Grassed Waterways
- NRCS National Environmental Compliance Handbook
- NRCS Cultural Resources Handbook